

REMARKS

In the Final Office Action mailed May 30, 2003, claims 7 and 34 were objected to, claims 2-8, 16, 26, 29-35, and 37 were rejected under 35 U.S.C. 102(b) as being anticipated by Takeda et al. (U.S. Patent No. 5,228,100), claims 17-21, 25, and 27 were rejected under 35 U.S.C. 102(e) as being anticipated by Katsuyama et al. (U.S. Patent No. 6,035,061), and claims 9 and 36 were rejected under 35 U.S.C. 103 as being unpatentable over Takeda et al. in view of Tsuchiya et al. (U.S. Patent No. 5,857,034). The foregoing objections and rejections are respectfully traversed.

The specification is amended for clarification.

The Examiner is respectfully reminded that claim 1 (along with claims 10-15, 23, and 28) was cancelled in the Amendment filed March 10, 2003, as the Office Action Summary page of the May 30 Final Office Action indicates that claim 1 is pending.

A Request for Continued Examination (RCE) is filed concurrently herewith.

An Information Disclosure Statement (IDS) is also filed concurrently herewith.

Pending claims 2-9, 16-22, 24-27, and 29-37. New claims 38-62 are added.

Takeda et al. recognizes a physical structure of a sheet image such as line segments constituting the table image and characters inside and outside region of the table. Further, Takeda et al. discloses how the structure of a corner is recognized, by referring to Fig. 20A-20F. Takeda et al. distinguishes the patterns PT1-PT6 by the way discussed in the description of column 14, lines 36-68 and Fig. 21. That is, each region PT1-T3 is divided into 16 cells by horizontal lines H1, H2, and H4, and vertical lines V1, V2, and V3. Moreover, each pixel density of the 16 regions is found. The corner patterns PT1-PT2 are distinguished from the distribution of the density. Takeda et al. finds the corner pattern which has been found as a corner. Further, if there are any blurs on the round corner region, Takeda et al. cannot distinguish the corner patter in a case of existence of blur on the round corner.

Katsuyama et al. (U.S. Patent No. 6,035,061) finds ruled lines by the way discussed in column 10, 5857, column 11-14 and Fig. 11-13. That is, regions having a width composed of more pixel numbers than a fixed number and length of more than a fixed length are found and the regions are integrated as a line as shown in Fig. 11. Katsuyama et al. decides a rectangular as a title region by giving points to the rectangle. The point is added to the rectangle according to a ratio of the width of the rectangle to another rectangle of character

strings region and a ratio of the length of the rectangle to the region of the character strings et al.

Tsuchiya et al. discusses extending a longitude ruled line and a lateral ruled line of a table having a round corner, and deleting the round corner.

The combination of Takeda and Tsuchiya recognizes a physical structure of a sheet image such as line segments constituting the table image and characters inside and outside region of the table, and extending a longitude ruled line and a lateral ruled line of a table having a round corner, and deleting the round corner.

The present invention patentably distinguishes over the foregoing references relied upon, either alone or in combination, as explained.

Apparatus claim 38, and corresponding medium claim 51, recite (using the recitation of claim 38 as an example) a table image processing device wherein "the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line", "the unit finding the potential match of the round corner region decides, in a case that the first oblique element and the second oblique element overlap, the part as the potential match of the round corner", and "the unit deciding a round corner part decides the part as the round corner in a case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order".

Apparatus claim 39, and corresponding medium claim 52, recite (using the recitation of claim 38 as an example) a table image processing device wherein "wherein the unit finding the potential match of the round corner region extracts the oblique element by extracting a first oblique element commencing from a terminal of a longitudinal line, and a second oblique element commencing from a terminal of a lateral line", and "wherein (A) the unit finding a potential match of a round corner region decides the part as the potential match of the round corner by two processes of the process (A), (B) and (C) in the following:

(A) process that the part is decided as the potential match of the round corner, in the case that the first oblique element and the second oblique element overlap;

(B) process that the part is decided as the potential match of the round corner, in the case that the distance between the first and the second oblique line found by calculating the distance is within a fixed value; and

(C) the process that the part is decided as the potential match of the round corner in the case that any another oblique element does not exist near an identified oblique element and

there is a pattern showing a line feature at the terminal of the identified oblique line”, and “wherein the unit deciding a round corner part decides the part as the round corner in the case that the pixel density at a corner of a cell extracted by the unit extracting the cell changes in a fixed order”.

Apparatus claim 40 recites similar features of the present invention as are recited in apparatus claim 39, but recites “by the process (A), (B), and (C)”, instead of “by two of the processes of the process (A), (B), and (C)” (as is recited in claim 39).

Apparatus claim 53 and corresponding medium claim 59 and corresponding method claim 61 of the present application recite (using the recitation of claim 53 as an example) a table image processing device “wherein the unit finding ruled line finds whether the identified potential match of the ruled line is a ruled line or not based on roughness of the potential match of the ruled line and any one of threshold of different plural thresholds corresponding to another image pattern extracted from the input image pattern existing around the identified potential match of the ruled line”, and “the unit finding ruled line comprises at least one unit of a pixel density finding unit (A) and a ruled line width finding unit (B)”, “the pixel density finding unit (A) finding comprising a first threshold fixed in advance and a second threshold fixed in advance higher than the first threshold”, and “the pixel density finding unit, corresponding to the pixel density of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in the case that the pixel density of the image pattern other than the identified potential match of ruled line is high, and uses the second threshold in a case that the pixel density of the image pattern other than the identified potential match of ruled line is low”.

The foregoing claims 53, 59, and 61 also recite (using the recitation of claim 53 as an example) “the ruled line width finding unit (B) comprising the first threshold fixed in advance or the second threshold fixed in advance higher than the first threshold”, and “the ruled line width finding unit, corresponding to the width of the image pattern existing around the identified potential match of the ruled line, uses the first threshold in a case that the width of the image pattern is wide, and uses the second threshold in a case that the width of the image pattern is narrow”.

Apparatus claim 57 recites similar features as are recited in apparatus claim 53, but recites “the unit for finding ruled line comprises a pixel density finding unit (A) and a ruled line width finding unit (B)”, instead of the unit finding ruled line comprises at least one unit of a pixel density finding unit (A) and a ruled line width finding unit (B)” (as is recited in claim 53).

Dependent claims 41-52, 54-56, 58, 60, and 62 recite patentably distinguishing features of their own. For example claim 41/38 recites “wherein the unit deciding a round corner

part, after the process of finding the round corner part based on the pixel density change, finds whether the regulation of the ruled line arrangement exists or not, and when the regulation exists, decides another corner of the input image as a round corner."

Withdrawal of the foregoing objections to, and rejections of, the claims is respectfully requested.


If there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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